



Taxonomy examination (628 n)

Answer the following questions :

1- Write on :-

- a) One primitive and advanced families.
- b) system of classification by :-
 - i- Engler .
 - ii- Theophrastus .

2- Discuss the system of classification :-

- a) Artificial .
- b) Phylogenetic .

3- **Explain using chromosomes number in the cells for classification and mention some examples :**

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Answer the following questions :

1- Write on :-

a) One primitive and advanced families.

Primitive family as Annonaceaceae the perianth consists of three whorls , each consists of three and rarely of two segments. Androecium consists of many indefinite stamen arranged spirally. On a large convex receptacle above the perianth . Gynoecium consists of many carpels are spirally arranged on a large convex receptacle . (apocarpous).

But in advanced family Labiatae the perianth differentiated into calyx and corolla androecium consists of four .didynamous sometime reduced to two. Gynoecium it consists of two carpels syncarpous

b) system of classification by :-

i- Engler

System of classification by Engler. arranged families according to flower, fruits, and seed. Seed plants divided into .Monocotyledoneae , Dicotyledoneae and Gymnospermae . Dicotyledoneae . divided into archichlamydeae and sympetalae.

ii- Theophrastus .

Classified the plants into four groups on the basis of their habit; Herbs, Undershrubs, Shrubs and trees.

2- Discuss the system of classification :-

a) Artificial .

This type of system was considered the earliest one and the system of this nature remained dominant from 300 B.C, up to about 1830 A.C. Since very little information was available about the plants; these systems were based on one or a few characters.

b) Phylogenetic .

Phylogenetic (phylo= evolution. Genetic= relationship) systems attempt to classify plants and arrange them into groups from the simple and primitive to the complex and advanced . Most of these systems try to explain the relationships between primitive and advanced groups how advanced characters are derived from primitive ones.

3- **Explain using chromosomes number in the cells for classification and mention some examples :**

The chromosome number can be a plesiomorphic characteristics of a large clade or a recurrent trait which arose independently in two or more clades. Chromosome numbers are usually determined at mitosis and quoted as the diploid number ($2n$), unless dealing with a polyploidy series in which case the base number or number of chromosomes in the genome of the original haploid is quoted. In this branch another useful taxonomic character is the position of the centromere.

Examples:

□ In family Ranunculaceae, the chromosome number and chromosome morphology have keenly provided prime basis for more natural arrangement of genera and tribes. Two major tribes of family Ranunculaceae namely Helleboreae and Anemoneae have got genera base chromosome numbers of 7, 8 and 9 and both the tribes have got genera with large and small chromosome types.

□ The genera *Aquilegia* and *Isopyrum* of Heeboreae, *Thalictrum* and *Anemonella* of Anemoneae have got base number 7 with small type chromosomes. These four genera have thus been segregated in a separate tribe called Thalictrea.

□ The genera *Agave* and *Yucca* placed in two separate families, Amaryllidace & Liliaceae respectively, with 3 long and 25 short chromosomes. Their Karyotype similarity justifies the cause of inclusion in a single family Agavaceae as has been done by Hutchinson.

□ The two genera of family Brassicaceae, *Physaria* and *Lesquerella* were recognized by many as a single genus.